

**North Carolina Department of Health and  
Human Services**  
*Division of Medical Assistance*

*North Carolina Family Planning Waiver  
Baseline Year Fertility Rate Report*

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**Summary**

The State of North Carolina Department of Health and Human Services, Division of Medical Assistance (DMA) contracted with Navigant Consulting, Inc. to evaluate the State's 1115 Demonstration Family Planning Waiver, Be Smart Family Planning. A key component of the evaluation is estimating whether the Waiver is budget-neutral, i.e., whether the costs of the Waiver's family planning services are offset by the reduction in the costs of health care services for the Waiver participants. Budget-neutrality is determined by a formula that compares the reduced costs for health care services associated with a reduced fertility rate among Waiver participants, relative to a baseline fertility rate prior to the Waiver, against the increased costs for family planning services to Waiver participants.

The baseline fertility rate for potential Waiver participants in the budget-neutrality formula must be calculated from public survey data about women in North Carolina and from the State's Medicaid Management Information System (MMIS) claims data for all Medicaid participants.<sup>1</sup> The baseline fertility rate cannot be calculated from data about the specific women who would have been potentially eligible, enrolled, or participated in the Waiver during the baseline year, as these women cannot be identified prior to the year that the Waiver began.

In this report, we present our calculation of the baseline fertility rate with age categorizations. The baseline fertility rate is calculated as the estimated number of births per 1,000 women who would have participated in the Waiver program in North Carolina if the Waiver program had been operating during calendar year 2003:

$$\text{Baseline fertility rate} = \frac{\text{Number of births to "participating women" in NC in 2003}}{\text{Number of "participating women" in NC in 2003}} * 1,000$$

We calculated the baseline fertility rate for all women below 185 percent of the Federal poverty level (FPL). Table 1 shows the results of the baseline fertility rate calculation. As required in the evaluation plan for the waiver, we present the fertility rates in age groups.

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<sup>1</sup> An example of public survey data is the decennial census. We use other public survey data from the U.S. Bureau of the Census that are sample surveys conducted in the years between the censuses.

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**Table 1: Baseline Fertility Rate**

Measure	Ages 19 - 24	Ages 25 - 29	Ages 30 - 34	Ages 35 - 39	Ages 40 - 55	Ages 19 - 55
Baseline Fertility Rate	154.8	157.9	61.2	31.1	3.31	78.1

The baseline fertility rate for the 19-55 age group means that approximately seventy eight women out of every one thousand women in this age group and below 185 percent of the Federal Poverty Level had a live birth in 2003. Women in younger age groups tend to have a higher fertility rate.

We reviewed our estimates for reasonableness using a variety of sources and concluded that the results of the calculation are reasonable.

In the sections that follow, we present:

- A program overview
- Steps for determining the numerator and denominator of the baseline fertility rate
- Calculation of the baseline fertility rate
- Steps to assess the reasonableness of the baseline fertility rate

### **Program Overview**

Beginning October 1, 2005, North Carolina DMA began enrolling women and men into the Be Smart Family Planning Waiver. The waiver increased the income level for family planning services for women and men to 185 percent of the FPL, for women ages 19-55 and men ages 19-60. The reasoning behind using this income level stems from the state's Medicaid program for pregnant women, which has an increased income limit of 185 percent of the FPL for pregnant women, compared to 45 percent of the FPL for non-pregnant women. Once a woman gives birth and has her post-partum check-up, generally within two months from giving birth, a North Carolina woman is no longer eligible for Medicaid if her income is above 45 percent of the FPL.

According to academic studies, lack of availability of family planning services for women with and without a previous pregnancy has caused an increase of inadequately

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spaced, unwanted and unintended pregnancies.<sup>2</sup> These types of pregnancies contribute to an increased fertility rate in the state, and in particular they have resulted in higher costs to Medicaid for deliveries and care for the child through the first year of life.

Men ages 19-60 with income below 185 percent of the FPL are also included in this demonstration, since North Carolina has had limited resources in the past to provide vasectomies or other family planning services to men. By extending the family planning waiver services to include men, DMA expects that an increase of vasectomies will also lead to fewer unwanted, unintended and inadequately spaced pregnancies. This in turn should lead to a lower fertility rate, and thus, less Medicaid dollars spent for the births and care of these children.

The measurement of fertility rates is a requirement of the evaluation of this waiver, given that fertility rate reduction was a driving force in the granting of this waiver by CMS. To determine if the demonstration has an effect on the fertility rates, it is necessary to calculate a base year fertility rate to be used for comparison. This report reviews the data sources and calculations of the baseline fertility rate to be used throughout the evaluation of the demonstration waiver period.

### **Baseline Fertility Rate Calculation**

In this section we describe the data sources we use for the numerator and denominator to calculate the baseline fertility rate.

#### Baseline Fertility Numerator

For the numerator of the baseline fertility rate, we gathered data on the number of births to women below 185 percent of the FPL in North Carolina.

The North Carolina Department of Health and Human Services, Division of Public Health, State Center for Health Statistics (SCHS) provided birth certificate data to count the number of births in North Carolina for the 2003 calendar year. This data provides the number of births to women below 185 percent of the FPL.<sup>3</sup> This number of births includes those paid by Medicaid for the mother's health care services, the child's health care services, or both. Some women below 185 percent of the FPL may not be eligible for Medicaid payment for their health care services even while their children are eligible.

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<sup>2</sup> For a study about North Carolina, see Forrest, JD and Frost, J. "The Family Planning Attitudes and Experiences of Low-Income Women", *Family Planning Perspectives*, 36(6):246-277, November/December 1996.

<sup>3</sup> The birth certificate data includes twins and higher-order births in deliveries, and it does not include fetal deaths in deliveries.

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This more inclusive criterion for both mother and child is intended to include all births to women below 185 percent of the FPL. Similarly, as described in the next section, the denominator is for all women described below 185 percent of the FPL regardless of their Medicaid participation.

Table 2 shows our estimate of the number of births to women below 185 percent of the FPL by age category:

**Table 2: Baseline Fertility Numerator**

Measure	Ages	Ages	Ages	Ages	Ages	Ages
	19 - 24	25 - 29	30 - 34	35 - 39	40 - 55	19 - 55
<b>Number of Births to Women Below 185 percent of the FPL in NC</b>	27,222	13,529	7,067	2,835	624	51,277

SCHS maintains a database, named BabyLove, which contains records of all births in the state of North Carolina. Deliveries in a calendar year trigger a child to be included in the database, and at the end of the calendar year, a child is then linked to its mother in the database. This linked file containing the mother and child is then linked to the state's MMIS claims data to obtain the claims for the deliveries and child's first year of life.

The data that SCHS extracted from BabyLove contains records for deliveries either with the newborn's charges paid by Medicaid or with a mother's charges paid by Medicaid, or with both types of charges paid by Medicaid. We included all deliveries with any type of charges paid by Medicaid in order to count deliveries to women below 185 percent. Our rationale for this inclusion is that for a mother to have a Medicaid-covered delivery, she must be below 185 percent of the FPL, which is also true for newborn charges to be paid for by Medicaid.

**Baseline Fertility Denominator**

For the denominator of the baseline fertility rate, we gathered data on the number of women below 185 percent of the FPL in North Carolina.

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The denominator used for the estimated baseline fertility rate was obtained through DataFerret. DataFerret is a data mining and extraction tool available through the U.S. Census Bureau to query data sources including the Current Population Surveys. We used the Current Population Survey to calculate the baseline fertility denominators.<sup>4</sup> Table 3 shows our estimate of the number of women below 185 percent of the FPL by age category:

**Table 3: Baseline Fertility Denominator**

Measure	Ages 19 - 24	Ages 25 - 29	Ages 30 - 34	Ages 35 - 39	Ages 40 - 55	Ages 19 - 55
Number of Women Below 185 percent of the FPL in NC	175,889	85,670	115,427	91,131	188,245	656,362

**Baseline Fertility Rate**

A fertility rate is equal to the ratio of the numerator divided by the denominator, times 1,000 to express the ratio as a rate per 1,000 women.

Table 4 shows the calculated fertility rate for the defined population of women in North Carolina in 2003. This is the baseline fertility rate for the Waiver.

**Table 4: Baseline Fertility Rate**

Measure	Ages 19 - 24	Ages 25 - 29	Ages 30 - 34	Ages 35 - 39	Ages 40 - 55	Ages 19 - 55
Fertility Rate For Women Below 185 percent of the FPL in NC	154.8	157.9	61.2	31.1	3.31	78.1

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<sup>4</sup> The December 2003 CPS Food Security Supplement was used to determine the number of women below 185 percent of the FPL. The December 2003 Food Security Supplement variable HRPOOR (Household income relative to 185 percent poverty) was set to '1' to include the population below 185 percent poverty. The CPS Basic geography census state code, CPS GESTCEN, was set to 56 for North Carolina, the gender variable, PESEX was set to 2 for female, and the age variable, PRTAGE, was adjusted to include ages 19 – 55.

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In the course of preparing this calculation for North Carolina, we also conducted research on the data sources used to calculate the baseline fertility rates for the evaluation of Waiver programs in other States. The data sources that we used are similar to those used for evaluations in California, Oregon and Arkansas. An evaluation of Medicaid family planning demonstrations noted:

“For California, Oregon, and Arkansas, we used the count of all Medicaid-covered deliveries, either because the eligibility categories for maternity services did not match exactly to eligibility for the demonstration . . . or because the birth data were not available by Medicaid eligibility status.”<sup>5</sup>

An assumption in our calculation of the baseline fertility rate is that the fertility rate of all women below 185 percent of the FPL is close to the fertility rate for women who would have been eligible for the Waiver, enrolled, and then been participants in the baseline year. Among those women below 185 percent of the FPL, for example, the subset of women who are below 45 percent of the FPL are categorically eligible for Medicaid services, including family planning services, and could not be participants in the Waiver. To the extent that the average fertility rate is similar for women below 45 percent of the FPL and women between 45 percent and 185 percent of the FPL, we believe this assumption is reasonable. We do not have information that the education levels or wage-earning potentials, which could affect the average fertility rates, for women in these two income categories are substantially different.<sup>6</sup>

An assumption for the use of this baseline fertility rate over time is that the racial and ethnic composition of all women below 185 percent of the FPL will not significantly change. If the racial and ethnic composition does significantly change *and* the fertility rate significantly varies for different parts of this composition, then it may be necessary to further disaggregate the baseline fertility rate by racial and ethnic groups in addition to its current disaggregation by age groups.

**Assessment of Reasonableness of the Baseline Fertility Rate**

We used several resources and made several calculations to assess whether the baseline fertility rate and its components, as shown in the Tables above, are reasonable. Based on

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<sup>5</sup> Final Report CNA Evaluation of Medicaid Family Planning 1115 Demonstrations. Joanna Edwards, Janet Bronstein, and Kathleen Adams. November 2003.

<sup>6</sup> The negative effect of higher wage-earning potential on fertility has been studied for some women in North Carolina. [Source: “Economics of the Size of North Carolina Rural Families”. Bruce Gardner. In Economics of the Family. T. W. Schultz, ed. Conference of the National Bureau of Economic Research. University of Chicago Press. 1974.]



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these resources and calculations, we confirmed that the measures are reasonable. The resources and calculations are:

1. For the baseline fertility rate, a calculation of the fertility rate using the same data sources for the year 2004
2. For the denominator, a calculation using data from the American Community Survey (ACS) data (for the year 2004).
3. As a general reference, a calculation of the fertility rate for all women in North Carolina in 2003 and a comparison to the estimated fertility rate for North Carolina by the United States Census Bureau for 2000-2003.

We briefly describe these assessments and their results below.

1. The fertility rate using the same data sources for the year 2004

The fertility rate using data for the year 2004 is similar to the baseline fertility rate using the year 2003, which was the year specified for the evaluation of the Waiver.

**Table 5: Comparison of North Carolina Baseline Fertility Rates for 2003 and 2004**

Measure	Ages 19 - 24	Ages 25 - 29	Ages 30 - 34	Ages 35 - 39	Ages 40 - 55	Ages 19 - 55
<b>Baseline - 2003 Fertility Rate</b>	154.8	157.9	61.2	31.1	3.31	78.1
<b>2004 Fertility Rate</b>	181.9	137.7	78.2	28.0	2.7	77.0

We observed that the fertility rates for the complete age category of 19 - 55 are similar and that the variation across age categories is not systematically different for the two years.

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2. The denominator for women below 185 percent of the FPL using data from the ACS for the year 2004

We queried the American Community Survey (ACS) data for the number of women in North Carolina under 185 percent of the FPL.<sup>7</sup> The ACS data was only available at this level of detail starting in 2004.

Table 6 shows this comparison to the 2004 CPS data for North Carolina.

**Table 6: Comparison of Population Data from ACS and CPS Data Sources**

Measure	Ages	Ages	Ages	Ages	Ages	Ages
	19 – 24	25 – 29	30 – 34	35 – 39	40 – 55	19 – 55
Number of Women Below 185 percent of the FPL in NC (ACS 2004)	155,028	116,869	113,925	91,181	241,401	718,404
Number of Women Below 185 percent of the FPL in NC (CPS 2004)	156,267	108,875	98,039	107,438	240,231	710,850

The ACS numbers for the population of women below 185 percent of FPL are comparable to those obtained from CPS data in 2004 for the same population.

3. The estimated fertility rate for all women in North Carolina reported by the United States Census Bureau

To validate the general method for our calculated fertility rates, we calculated the fertility rate for all women in North Carolina in 2003 and compared this to a report on estimated fertility rates in North Carolina from 2000 to 2003 that was published by the United States Census Bureau. This report compared fertility rates using CPS and the

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<sup>7</sup> We queried the 2004 ACS Public-Use Microdata Samples (PUMS) data to obtain the number of women below 185 percent of the FPL. We chose the following criteria to identify this data subset: Age variable, AGE: 19 – 55; SEX = 2 (females); Geography = North Carolina; Poverty index, POVPI: between 0 and 185 percent of the FPL. We also conducted the query to obtain the number of all women in North Carolina minus the selection of the poverty variable, POVPI.

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Center for Disease Control National Center for Health Statistics (NCHS) data sources.<sup>8</sup> This report does not include a fertility rate for women by disaggregated age groups, nor does the complete age group range correspond to the entire age group range for the baseline fertility rate. We also compared our calculated fertility rate for all women in North Carolina in 2003 to a fertility rate that is reported by the Guttmacher Institute.<sup>9</sup>

We calculated the fertility rates for all women in North Carolina in 2003 using the complete age group in the U.S. Census Bureau report. For our numerator in this calculated fertility rate, we relied on a count of births to all women in North Carolina in 2003 that is published by SCHS, who had provided us with the data to calculate the count of births to women below 185 percent of the FPL as the numerator in the baseline fertility rate.<sup>10</sup> SCHS did not provide us (nor did we request) data on all births in North Carolina in 2003.

Table 7 shows the fertility rates for all women in North Carolina from these different sources:

**Table 7: Comparison of Fertility Rate for All Women in North Carolina**

Demographic Group	Age Group	Fertility Rate
All Women in NC in 2000 (Guttmacher Institute)	15 - 44	67
ACS Fertility Rate 2000-2003	15 - 44	71.5 (+/- 5.3 <sup>11</sup> )
NCHS Fertility Rate 2000-2003	15 - 44	66.2
All Women in NC in 2003	15 - 44	67.2

This method to calculate the fertility rate, when applied to all women in North Carolina, results in similar fertility rates to those that have been published.

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<sup>8</sup> U.S. Census Bureau, Indicators of Marriage and Fertility in the United States from the American Community Survey: 2000 to 2003, "Table 5. Comparison of ACS and NCHS Fertility Rates by State, 4-Year Average, 2000-2003," Accessed on July 12, 2007. Available online: <http://www.census.gov/population/www/socdemo/fertility/slideshow/table05.xls>.

<sup>9</sup> Guttmacher Institute, Tablemaker, "Birthrate per 1,000 women 15-44, 2000 (U.S. and each state)," Accessed on July 29, 2007. Available online: <http://www.guttmacher.org/tablemaker>.

<sup>10</sup> North Carolina State Center for Health Statistics, *Risk Factors and Characteristics for 2003 North Carolina Resident Live Births: All Mothers*. Accessed on July 12, 2007. Available online: <http://www.schs.state.nc.us/SCHS/births/matched/2003/all.html>.

<sup>11</sup> The +/- figure when added to or subtracted from the estimate provides the 90-percent confidence interval.